INDEX

Active Directory attacks DCSync, 82–83 Golden Ticket, 82–83 course, Hack the Box, 235 active information gathering, 18–19 port scanning with Metasploit, 25–26 with Nmap, 19–25 add_group_user command, 82, 240 Address Resolution Protocol (ARP) scans, 209–211 add_user command, 82, 240 administrator-level procedures, enabling, 174–175 administrators, impersonating, 243 Advanced Network Scans, in Nessus, 43–44 -A flag, Nmap port scanning, 20 Aircrack-ng suite, 132–133 aircrack-ng tool, 136 aireplay-ng tool, 134 Airgeddon, 136–138 airmon-ng tool, 132–133, 135	developing custom payloads, 101–104 encoding with MSFvenom, 93–96 evasion modules, 99–101 generating executables from Python files, 104–105 launching payloads stealthily, 98–99 packing executables, 96–97 Apache Tomcat, attacking, 212–214 Apple Silicon architecture, 235–236 arch label, module info sheet, 54 ARM architecture, 235–236 Armitage, 10 ARP (Address Resolution Protocol) scans, 209–211 assembly language basics, 156 automated vulnerability scanning. See vulnerability scanning AutoPwn2 module, 125–126 autoroute module, 208 auxiliary modules, 8, 145 categories of, 146 creating, 149–154 debugging, 153–154 running modules, 151–153 writing modules, 149–151 listing all available, 146–147
43–44 -A flag, Nmap port scanning, 20 Aircrack-ng suite, 132–133 aircrack-ng tool, 136 aireplay-ng tool, 134	AutoPwn2 module, 125–126 autoroute module, 208 auxiliary modules, 8, 145 categories of, 146 creating, 149–154
airmon-ng tool, 132-133	ě
225–226 AMD64 architecture, 234–235 anonymous logins, 30 anonymous module, 30 antivirus evasion, 91–92 creating binaries with MSFvenom, 92–93 custom executable templates, 97–98	Auxiliary::Scanner mixin, 32 available targets, module info sheet, 55 Awesome AWS S3 Security git repository, 223 Az-Blob-Attacker tool, 231 B background command, 78–79, 240, 243 backward jumps, 197–198

bad characters, identifying, 198–201	CloudGoat
banner grabbing, 36–37, 211–212	container takeovers, 226-229
Bash Bunny, 118–119	escaping Docker containers, 229–231
Basic Service Set Identifier (BSSID), 133	setting up, 225–226
binaries, creating with MSFvenom, 92-93	cloud look and bypass module, 18
bind shells, 8	Cobalt Strike, 10
bleeding edge repositories, 108	Cognito, 220
browser-based exploits, 122-123	commands
automating with AutoPwn2, 125-126	injection, 214–215
finding in Metasploit, 123–125	Meterpreter, 240–242
finding more recent, 126	post exploitation, 242-243
brute-force attacks, 68-69, 212-214	MSFconsole, 239-240
buffer overflows, porting, 157–159	MSFvenom, 242
adding randomization, 163	Common Vulnerabilities and Exposures (CVE)
configuring exploit definitions, 160–161	IDs, 52–53
implementing features of Framework, 162	community strings, 31
removing dummy shellcode, 164-166	compressed executables, 96-97
removing NOP slides, 163-164	compromising Windows virtual machines, 67–70
stripping existing exploits, 159-160	containers, Docker, 223–225
testing base exploits, 161–162	CloudGoat, 225–226
bypassing two-factor authentication, 116–117	container takeovers, 226-229
	escaping, 229–231
C	Kubernetes, 231
carriage returns and line feeds (CRLFs), 182	covert penetration testing, 5
cheat sheet, 239–243	credentials, harvesting, 139-143
check command, 239	creds_all command, 75–76
Chen, Wei, 49	CRLFs (carriage returns and line feeds), 182
childProcess function, 224	custom
clearev command, 89, 240	executable templates, 97–98
clearing logfiles, 89	payloads, developing, 101–104
client-side attacks, 121–122	scanners, writing, 32–33
browser-based exploits, 122-126	
file-format exploits, 126–128	D
clone system call, 224	data centers, 219
cloning websites, 113–117	data execution prevention (DEP), 157, 201
cloud	db_connect command, 239
functions, 221	db_create command, 239
security, 219–220	db_destroy command, 239
container takeovers, 226–229	db_import command, 21, 40, 45
Docker containers, 223–225	db_nmap command, 24, 239
escaping Docker containers, 229–231	db_status command, 21
identity and access management	DCSync attacks, 82–83
tools, 220	dcsync_ntml command, 76
Kubernetes, 231	deauthentication (deauth) attacks, 133-135
serverless functions, 221–222	deauthentication frames, 133-134
setting up cloud testing environments,	debugging
225–226	auxiliary modules, 153–154
storage, 222–223	buffer overflows, 161–162

SEH overwrite, 196	E
testing fuzzers, 188–191	egg hunting, 192
deepce script, 231	EIP (extended instruction pointer) registers, 156
DEP (data execution prevention), 157, 201	Elasticsearch application, 206–207
description section, module info sheet, 55	email
detection evasion, 91–92	malicious, 110–112
creating binaries with MSFvenom, 92-93	server setup, 109–110
custom executable templates, 97–98	encoders, 12
developing custom payloads, 101-104	encoding with MSFvenom, 93–96
encoding with MSFvenom, 93–96	enum_s3 module, 222–223
evasion modules, 99–101	escaping Docker containers, 229–231
generating executables from Python files,	ESP (extended stack pointer) registers, 156
104–105	ESSID (Extended Service Set Identifier), 133
launching payloads stealthily, 98-99	ethics, xxvii
packing executables, 96–97	evasion modules, 99–101
developer certificates, custom payloads with,	evasion techniques, 91–92
101–104	creating binaries with MSFvenom, 92–93
dictionary attacks, 136	custom executable templates, 97–98
digest authentication, 76	developing custom payloads, 101–104
dig tool, 18	encoding with MSFvenom, 93–96
dir command, 62	generating executables from Python files,
disabling protections, 156–157	104–105
Discord community, 233	launching payloads stealthily, 98–99
DistCC, 214–215	packing executables, 96–97
Docker containers, 223–225	event logs, clearing, 216–217
CloudGoat, 225–226	event_manager tool, 216–217
container takeovers, 226–229	Evilginx, 108, 116–117
escaping, 229–231	Evilgophish, 108, 117
Kubernetes, 231	Evil Portal module, 141–142
Docker Desktop application, installing,	Evil Twin attacks, 136–138
235–236	executables
docker-escape tool, 231	creating binaries with MSFvenom, 92-93
docker info command, 229–230	custom templates, 97–98
documenting intelligence gathering, 16	developing custom payloads, 101-104
domain administrator tokens, stealing, 242	embedding payloads in, 98-99
domain controllers	encoding with MSFvenom, 94-96
DCSync attacks, 82–83	generating, 11
Golden Ticket attacks, 82–83	from Python files, 104–105
token impersonation, 80–82	packing, 96–97
Domain Name System (DNS), 16–18	execute commands, 241
DoS attacks, 133–135	exploitation, 3, 51. See also porting exploits to
dos/wifi/deauth modules, 149	Metasploit
download command, 241	basic, 52
downloading Nessus scan reports, 47	client-side attacks, 121–122
drop_token command, 241	browser-based exploits, 122-126
Ducky Script, 118	file-format exploits, 126–128
dummy shellcode, removing, 164–166, 169–170	searching for exploits, 52–55
dumping password hashes, 242–243	

exploitation (continued)	generate_seh_payload function, 169
SEH overwrites	generating executables from Python files,
adding payloads, 198	104–105
bad characters in, 198–201	getprivs command, 241
creating exploits, 192–194	getsystem command, 78, 241
getting return addresses, 194-196	getuid command, 78–79
including backward jumps and near	_GNU_SOURCE, 223-224
jumps, 197–198	Golden Ticket attacks, 82–83
selecting exploits, 56–59	<pre>golden_ticket_create command, 83</pre>
simulated penetration tests, 206-208	Google Safe Browsing API, 149–153
of Ubuntu machine, 63-65	Gophish, 108, 112–113
of Windows machine, 60-63	
exploit command, 59, 64, 79, 180, 240	Н
exploit modules, 8	h2b (hex-to-binary) conversion, 181-182
exploits, defined, 8	Hack the Box online Active Directory course, 235
exporting Nessus scans, 47	Hak5, 139
Extended Service Set Identifier (ESSID), 133	handshakes, capturing and cracking, 135-136
extracting password hashes, 72–73	harvesting
	credentials, 139–143
F	usernames and passwords, 113–116
false negatives, 37	hashdump command, 241
false positives, 37, 44	hashes
file-format exploits, 126–128	dumping, 242–243
fingerprinting, 5	extracting, 72–73
forensic analysis, thwarting, 215–216	Golden Ticket attacks, 82–83
framework.log file, 153	Mimikatz, 75–76
FTP servers, scanning for, 30	pass-the-hash technique, 74
ftp_version module, 30	help command, 41, 241
fuzzing, 185-186	hex blobs, 174
developing SEH overwrites	hex-to-binary (h2b) conversion, 181–182
adding payloads, 198	hosts command, 21–22, 39, 45, 48
creating exploits, 192–194	HttpClient mixin, 150
getting return addresses, 194-196	http://flaws.cloud site, 29
including backward jumps and near	HTTP modules, searching for, 148–149
jumps, 197–198	HTTP PUT method, 212
identifying bad characters, 198-201	human interface devices (HIDs), 118-119
identifying vulnerabilities	_
controlling SEH, 190–192	1
downloading test applications, 186	identity, 220
testing fuzzers, 187–190	identity and access management (IAM) tools, 220
writing fuzzers, 186–187	images, Docker, 223
fuzz strings, 187	IMAP (Internet Message Access Protocol)
_	fuzzer, 186–187
G	Immunity Debugger
gadgets, 157–158	buffer overflows, 161–162
Game of Active Directory lab environment, 234	SEH overwrites, 196
Gates, Chris, 149	testing fuzzers, 188–191
gather modules, 85	impersonate_token command, 241

impersonating administrators, 243	password dictionary, 69
importing	setting up lab environments, 233–237
Nessus results into Metasploit, 45-46, 48	Whois lookup, 16–17
Nexpose reports into Metasploit, 40	Karma attacks, 136
Nmap scan results into Metasploit, 20-22	Kelley, Josh, 173
incognito command, 81–82, 243	Kennedy, David, 107, 173
indirect information gathering techniques,	kerberos_ticket_use command, 83
16–18	Kerberos tokens, 80–82
Infectious Media Generator attacks, 117–119	keyscan_dump command, 241
info command, 54, 148, 194, 240	keyscan_start command, 241
intelligence gathering, 2, 15	keyscan_stop command, 241
active information gathering, 18–19	keystroke logging, 71–72, 243
port scanning with Metasploit, 25–26	kiwi module, 75–76, 83
port scanning with Nmap, 19–25	krbtgt (Kerberos Ticket Granting Ticket), 82
custom scanners, writing, 32–33	Kubernetes Goat, 231
documenting, 16	
passive information gathering, 16-18	L
simulated penetration tests, 204-205	lab environments, setting up, 233
targeted scanning, 26	ARM and Apple Silicon, 235–236
for FTP servers, 30	installing Kali metapackages,
for poorly configured MS SQL servers,	236–237
28–29	x86 and AMD64, 234–235
for S3 buckets, 29	lambda functions, 221–222
for Server Message Block, 26–28	lateral movement techniques, 80-83
for Simple Network Management	LHOST option, 240
Protocol, 31–32	Linux system
for SSH server versions, 29–30	establishing persistence on, 85-88
test environments, operating in, 16	scanning, 209–211
interactive remote GUIs, accessing, 84	setting up lab environments, 233-237
interfaces, Metasploit, 9–10	listeners, 8, 10
Internet Message Access Protocol (IMAP)	list_tokens -g command, 241
fuzzer, 186–187	list_tokens -u command, 241
IP address of servers	list_tokens -u function, 81
finding, 17–18	loadpath command, 187
TCP idle scans, 22–24	local_exploit_suggester module, 79
ipconfig command, 208	<i>log4j</i> vulnerability, 53
irb shell, 89	Log4Shell HTTP Header injection exploits
	info sheet for, 54–56
J	running, 59
Jenkins server, 60–61	saving settings, 59
jmp esp command, 113–116	selecting, 56–57
JMP ESP instructions, 156–158, 162	setting/unsetting options and parameters 58–59
K	showing payloads for, 57–58
Kali Linux	showing targets, 58
downloading, 234	logfiles, clearing, 89
installing, 5–6	login pages, harvesting usernames and
metapackages, 236–237	passwords from, 113–116

logins, anonymous, 30	post-exploitation commands and syntax,
ls -al command, 229	242–243
ls command, 241	privilege escalation, 77–80
	scraping systems, 85
M	token impersonation, 80–82
MailCarrier exploits, 157–159	viewing all traffic on targets, 84–85
adding randomization, 163	microservices architecture, 231
configuring exploit definitions, 160–161	Microsoft certificates, custom payloads with,
implementing features of Framework, 162	101–104
removing dummy shellcode, 164–166	Microsoft SQL Server
removing NOP slides, 163–164	creating MS SQL modules, 178
stripping existing exploits, 159–160	defining exploits, 180
testing base exploits, 161–162	editing existing modules, 178–179
mail exchange (MX) records, looking for, 18	running exploits, 183–184
make_nops function, 163	running exploits, 180
	ž .
malicious email, sending, 110–112	uploading PowerShell scripts, 181–183
man-in-the-middle attacks, 116–117, 138–139	Express, installing, 234–235
mdk4 tool, 134–135	getting command execution on existing
Memelli, Matteo, 186	modules, 173–178
memory-resident attacks, 215–216	scanning for poorly configured, 28–29
metapackages, Kali, 236–237	migrate command, 72, 241
Metasploit, xxiv, 7	migration, 71, 243
installing, 5–6	Mimikatz, 75–76
interfaces, 9–10	mixins, 32, 150
Pro, 7, 13	mobile device attacks, 119
terminology, 8	modules, 8, 173. See also auxiliary modules
utilities, 11–12	creating, 178
Metasploitable, installing, 5–6	defining exploits, 180
Meterpreter, 67	editing existing modules, 178–179
basic commands, 70–71	running exploits, 183–184
capturing keystrokes, 71–72	running shell exploits, 180
capturing screenshots, 71	uploading PowerShell scripts, 181-183
commands for, 84–88, 240–242	getting command execution on MS SQL,
compromising Windows machines, 62-63,	173–178
67–70	info sheets, 54–55
DCSync attacks, 82–83	running, 59
developing custom payloads, 101-104	saving settings, 59
enabling Remote Desktop Services, 84	searches for, 53–54
establishing persistence, 85-88	narrowing, 52
extracting password hashes, 72–73	selecting, 56–57
finding platform information, 71	setting/unsetting
Golden Ticket attacks, 82–83	options, 58–59
lateral movement techniques, 80-83	parameters, 59
manipulating Windows APIs with Railgun,	showing payloads for, 57–58
88–89	showing targets, 58
Mimikatz and kiwi, 75–76	/modules/auxiliary directory, 146
pass-the-hash technique, 74	module side effects section, module info sheet, 55
pivoting, 89	mona.py file, 162
1 U'	12

!mona seh command, 169	scanning in Metasploit, 46–48
monster-in-the-middle attacks, 116-117,	viewing reports, 44–45
138–139	nessus_db_import command, 48
Moore, H.D., xxiv	nessus_scan_download command, 47
Morales, Antonio, 201	nessus_scan_export command, 47
MSFconsole, 9	nessus_scan_launch command, 47
frequently used commands and syntax,	nessus_scan_list command, 47
239–240	Netcat, 36–37
help files, accessing, 9	Netcraft, 17
launching, 9	netstat commands, 235
running Nexpose in, 40–42	Network Address Translation (NAT), 25-26
running Nmap from, 24–25	Nexpose, 37
msf/core gem, importing, 149	configuring, 37–40
MSFvenom, 11–12	home screen, 38
creating and encoding payload, 242	importing reports into Metasploit, 40
creating stand-alone binaries with, 92–93	New Report Wizard, 39–40
encoding with, 93–96	New Site Wizard, 39
mssql_exec auxiliary module, 175–176	running in MSFconsole, 40–42
mssql_payload exploit, 178	next SEH (NSEH) records, 192, 197
mssql_ping module, 28–29	ngrok TCP proxy, 228–229
mssql_powershell module, 173–174	Nmap, port scanning with
mssql_powershell.rb exploit, 178, 180	compromising Windows virtual machines, 68
editing existing module, 178–179	container takeovers, 227
running, 183–184	importing results into Metasploit, 20-22
shell, 180	running Nmap from MSFconsole, 24-25
uploading PowerShell scripts, 181–183	running quick scans, 19–20
mssql.rb file, 176–177, 181, 183	service-enumeration scans, 20
mssql_xpcmdshell_enable function, 177	simulated penetration tests, 204-205
mssql_xpcmdshell function, 176-177	TCP idle scans, 22–24
Mudge, Raphael, 10	nmap command, 59
multi/handler module, 92–93, 103	NOP (no-operation) instructions, 156, 169
multi/http/tomcat_mgr_deploy exploit, 212–214	slides, 156, 163–164
multi/manage/autoroute module, 209	
MX (mail exchange) records, looking for, 18	0
mysql_login module, 68–69	obscure services, attacking, 214–215
MySQL servers, brute-forcing authentication on,	O.MG Cable, 119
68-69	opcodes, 12
	open source intelligence (OSINT), 16
N	OptBool.new function, 150
nasm_shell.rb utility, 12	options, setting/unsetting, 58-59
NAT (Network Address Translation), 25-26	overt penetration testing, 4–5
near jumps, 197–198	_
Nessus, 42	P
Bridge plug-ins, 46	packet recorder, 84
configuring, 42–43	packing executables, 96–97
creating scans, 43–44	parameters, setting/unsetting, 59
false positives, reducing, 44	passive information gathering, 16-18
importing results into Metasploit, 45–46	pass-the-hash technique, 74

passwords	implementing features of
dictionary, 69	Framework, 162
dumping hashes, 242–243	removing dummy shellcode, 164-166
extracting hashes, 72–73	removing NOP slides, 163–164
Golden Ticket attacks, 82–83	stripping existing exploits, 159–160
harvesting with Zphisher, 113-116	testing base exploits, 161–162
keystroke logging, 71–72	disabling protections, 156–157
pass-the-hash technique, 74	SEH overwrite exploits, 166–171
payload.encoded function, 164	port scanning
payloads, 8	with Metasploit, 25–26
developing custom, 101–104	with Nmap
encoding with MSFvenom, 94–96	compromising Windows machines, 68
launching stealthily, 98–99	importing results into Metasploit,
sending malicious email, 110–112	20–22
viewing active lists of, 57	running Nmap from MSFconsole,
PEASS (Privilege Escalation Awesome Scripts	24–25
Suite), 230	running quick scans, 19–20
Penetration Testing Execution Standard	service-enumeration scans, 20
(PTES), xxiv, 1	TCP idle scans, 22–24
covert tests, 5	SYN, 26, 204-205
installing Kali, Metasploit, and	post exploitation, 3–4
Metasploitable, 5–6	Meterpreter commands and syntax, 242–243
overt tests, 4–5	simulated penetration test, 208–211
phases of, 2–4	PostgreSQL database system, 21
vulnerability scanners, 5	post/multi/manage/shell_to_meterpreter module, 103
PercussiveElbow, 231	powershell_upload_exec function, 180–181
permissions, 220, 242	preengagement interactions, 2, 204
persistence, establishing, 85–88, 207–208	pre-shared keys, 133, 135
pfSense firewall, 234	principals, 220
phases of penetration testing, 2–4	privileged labels, module info sheet, 54
phishing attacks, 109–113	privilege escalation, 77–80
ping command, 19	attacks, 229–231
Piper, Scott, 29	Privilege Escalation Awesome Scripts Suite
pivoting, 25, 89	(PEASS), 230
platform information, finding, 71	processes
platform labels, module info sheet, 54	injection, 72
PMFs (protected management frames), 134	isolation, 225
-Pn flag, Nmap port scanning, 19	migration, 71
policies, 220	Process Explorer, 97–98
polymorphic encoders, 96	proof-of-concept exploits, 158
PolyPack project, 97	protected management frames (PMFs), 134
POP-POP-RETN instruction pointer, 166, 169,	protocol fuzzers, 145
192–198	Provided By section, module info sheet, 55
porting exploits to Metasploit, 155–156	proxy chains, 209–211
assembly language basics, 156	ProxyChains tool, 210–211
buffer overflows, 157–159	pry-byebug, 154
adding randomization, 163	ps command, 80–81, 241
configuring exploit definitions, 160–161	psnuffle module, 138–139

PTES. See Penetration Testing Execution	scanner/http modules, 148
Standard	scanning Linux systems, 209–211
pwd command, 65	scan policies, creating in Nessus, 44
Python files, generating executables from,	scraping systems, 85
104–105	screenshot command, 71, 241
	screenshots, capturing, 71
Q	search command, 52–53, 99, 148, 240
Quick TFTP Pro 2.1 exploit, 166–171	searching for exploits, 52–55
_	searchsploit tool, 53-54
R	Secure Shell (SSH) server version, scanning for,
Railgun, manipulating Windows APIs with, 88-89	29-30
randomization, adding to exploits, 163, 168-169	SEH. See Structured Exception Handler
rank labels, module info sheet, 54	SEHOP protection, disabling, 157, 191
Rapid7, 6, 26, 37, 49	selecting exploits, 56–59
read-only (RO) community strings, 31	send_request_cgi method, 151
read/write (RW) community strings, 31	serverless functions, 221–222
reboot command, 241	Server Message Block (SMB)
RECONFIGURE command, 175	scanning for, 26–28
references section, module info sheet, 55	validating logins, 48-49
reg command command, 241	service-enumeration scans, 20
registers, 156	services command, 25
related modules section, module info sheet, 55	sessions -c cmd command, 240
Remote Desktop Services, enabling, 84	sessions -K command, 240
remote GUIs, accessing, 84, 243	sessions -1 command, 240
reports, 4	sessions -l -v, 240
Nessus	sessions -u command, 77, 103, 207–208, 240
importing into Metasploit, 45-46	SET. See Social-Engineer Toolkit
viewing, 44–45	set command, 58–59, 61, 240
Nexpose, importing into Metasploit, 40	setdesktop <i>number</i> command, 241
resource scripts, 10	setg command, 59, 240
return-oriented programming (ROP), 201	set payload command, 240
rev2self command, 78, 241	set target command, 240
reverse_https shell, 104	shellcode, 8, 11–12
reverse proxies, 18	shell command, 62, 77, 241, 243
reverse shells, 8, 57, 92–93, 103	shikata_ga_nai encoder, 94–96
Rhino Security Labs, 225–226	show advanced command, 146, 240
RHOST option, 23, 240	show auxiliary module, 52, 240
roles, 220	show exploits command, 52, 240
Rubber Ducky, 118	show options command, 52, 180, 240
run command, 59, 150-151	show payloads command, 57–58, 240
run post/windows/manage/enable_rdp, 84	show targets command, 58, 240
· · · · · · · · · · · · · · · · · · ·	-sI flag, 23–24
\$	Simple Network Management Protocol (SNMP),
S3 (Amazon Simple Storage Service) buckets,	31–32
29, 222–223	simulated penetration tests, 203
S3Scanner, 29	attacking Apache Tomcat, 212–214
save command, 59	attacking obscure services, 214–215
saving exploit settings, 59	covering tracks, 215–217

simulated penetration tests (continued)	overwrites
exploitation, 206–208	developing, 192–198
intelligence gathering, 204–205	porting, 166–171
post exploitation, 208–211	SurgeMail application, 186–192
preengagement interactions, 204	SYN port scanner, 26, 204–205
threat modeling, 205–206	sys_exec function, 69
size of payloads, viewing, 194	sysinfo command, 71, 242
smart_hashdump command, 73–74	
SMB. See Server Message Block	T
SMB Login Check Scanner, 48–49	tabnabbing, 116
smb_login module, 48	tail command, 153, 187
smb_version module, 26–28	targeted scanning, 26
sniffer_dump command, 241	for FTP servers, 30
sniffer_interfaces command, 84, 241	for poorly configured MS SQL servers,
sniffer_start command, 241	28–29
sniffer_stats command, 241	for S3 buckets, 29
sniffer_stop command, 241	for Server Message Block, 26–28
sniffing traffic with Metasploit, 138–139	for Simple Network Management Protocol,
snmp_enum module, 31	31–32
snmp_login module, 31	for SSH server version, 29–30
Social-Engineer Toolkit (SET), 107	targets, showing, 58
Infectious Media Generator attacks,	TCP scanner, 32–33
117–119	idle scans, 22–24
spear-phishing attacks, 109–113	templates, custom executable, 97–98
updating and configuring, 108–109	terminology, 8
web attacks, 113–117	Terraform command line interface, 225
socket, Docker, 223	test environments
SOCKS protocol, 209–210	operating in, 16
spear-phishing attacks, 109–113, 122	setting up, 233
specialty vulnerability scanners, 48–50	ARM and Apple Silicon, 235–236
Sprocket Security, 113	installing Kali metapackages,
SQL Server Express, installing, 234–235	236–237
squatting, 109–110	x86 and AMD64, 234-235
-sS flag, Nmap port scanning, 19–20	testing fuzzers, 187–190
SSH keys, 86–88	theHarvester tool, 110
ssh_login_pubkey module, 87	THREADS value, 23, 27
SSH (Secure Shell) server version, scanning for,	threat modeling, 2–3
29–30	simulated penetration tests, 205–206
ssh_version module, 29-30	timestomp command, 216, 242
stack cookies, 165–166	time to live (TTL), 205
stand-alone binaries, creating with MSFvenom,	token impersonation, 80–82
92–93	traffic
stealthcopter, 231	sniffing with Metasploit, 138–139
steal token PID command, 241	viewing on targets, 84–85
storage, cloud, 222–223	Trivial File Transfer Protocol (TFTP), 168
stored procedures, 174–175	Twitter, 122
Structured Exception Handler (SEH)	two-factor authentication, bypassing,
controlling, 190–192	116–117

U	tabnabbing, 116
Ubuntu Machine, exploiting, 63–65	username and password harvesting,
uictl enable command, 242	113–116
unset command, 58–59	webdav_scanner module, 147
unsetg command, 59	website cloning, 113–117
upload command, 242	whoami command, 62, 82
uploading user-defined functions, 69–70	whoami /priv, 175-176
UPX packer, 96–97	Whois lookups, 16–17
USB human interface devices (HIDs), 118–119	Wi-Fi attacks, 131
use command, 56, 61, 147, 240	capturing and cracking handshakes,
use incognito command, 81, 242	135–136
use post/linux/manage/sshkey_persistence	connecting to wireless adapters, 132
command, 86	deauth and DoS attacks, 133-135
use priv command, 73, 78, 242	Evil Twin attacks, 136-138
User Access Control (UAC), 243	harvesting credentials with Wi-Fi Pineapple
user accounts, privilege escalation for, 77–80	139–143
usernames, harvesting, 113–116	monitoring traffic, 132–133
users, 220	sniffing traffic with Metasploit, 138–139
use sniffer command, 242	Wi-Fi Pineapple, 139–143
utilities, Metasploit, 11–12	wifite wordlist, 136
utilities, Metaspioit, 11–12	Wi-Fi traffic, monitoring, 132–133
V	Windows
validating SMB logins, 48–49	Active Directory servers, 234
VirusTotal, 93, 95, 97–98, 102–103	APIs, manipulating with Railgun,
Vulnerability and Exploit Database, 49–50	88-89
vulnerability scanning, 3, 35–36	Portable Executable, generating, 92
basic scans, 36–37	User Access Control, bypassing, 243
with Nessus, 42	virtual machines
configuring, 42–43	compromising, 67–70
creating scans, 43–44	exploiting, 60–63
importing results into Metasploit,	windows_defender_exe evasion module, 100–101
45–46	windows/smb/psexec module, 74
scanning in Metasploit, 46–48	wireless adapters, connecting to, 132
viewing reports, 44–45	wireless attacks. See Wi-Fi attacks
with Nexpose, 37	Word documents, exploiting, 126-127
configuring, 37–40	workspace command, 41
importing reports into Metasploit, 40	WPA four-way handshakes, 135–136
running in MSFconsole, 40–42	Wright, Jordan, 112
specialty scanners, 48–50	writing Metasploit modules, 173
vulnerable services, identifying, 211–212	getting command execution on MS SQL,
vulns command, 27–28	173–178
valis command, 17 40	targeting MS SQL, 178
W	defining exploits, 180
web API vulnerabilities, 220	editing existing modules, 178-179
web attacks, 113	running exploits, 183–184
bypassing two-factor authentication,	running shell exploits, 180
116–117	uploading PowerShell scripts, 181–183

X

X (social media company), 122 x86 architecture, 234–235 x86/shikata_ga_nai encoder, 12 xp_cmdshell procedure, 174–178

Z

Zate, 46 Zphisher, 108 username and password harvesting, 113–116